Owner & Operator Compliance Guidelines For Federally Regulated Petroleum Product USTs

Prepared by the Environmental and Regulatory Services



INVENTORY CONTROL AND TIGHTNESS TESTING COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK ONLY, EXCEPT TANKS UPGRADED WITH CATHODIC PROTECTION.

TO BE IN COMPLIANCE ALL REQUIREMENTS MUST BE MET.

RECORD TANK LIQUID LEVEL, LIQUID VOLUME, AND AMOUNT OF PRODUCT PUMPED DAILY.

- > Measurements must be recorded every day, including deliveries and product removed by any means.
- Measuring stick must have 1/8th inch graduations in measurements.
- > Convert measurements of liquid depth to liquid volume using tank chart corresponding to tank.
- > Compare measurement of delivery volume to volume listed on delivery receipt.
- Measurements of the liquid volume in the tank must be made before and after each delivery to calculate the volume of the delivery based upon liquid level measurement. Compare this calculated volume to the delivery volume (be sure to use gross gallons) indicated on the delivery receipt. Discrepancy must be investigated.

DROP TUBE PRESENT IN TANK FILL PIPE.

A drop tube is an extension of the fill pipe that extends to within 4 inches of the tank bottom.

THE DISPENSER METER MUST BE CALIBRATED ON AN ANNUAL BASIS.

RECORD MONTHLY CHECK FOR WATER.

If no water is detected, write "0" in record to document that check was conducted. If water was discovered, record amount and how problem was corrected. If water level is 2" or more it should be removed.

MONTHLY RECONCILIATION.

Compare your monthly over/short to the threshold (1% of throughput + 130 gallons of product pumped during the month) to determine if you have identified a problem. Record this calculation and the results of the comparison.

☑ INVENTORY RECORDS MUST BE KEPT ON SITE FOR AT LEAST A YEAR.

All inventory records should be maintained on site readily available for inspection.

RECORDS ON FILE OF RESULTS OF LAST TIGHTNESS TEST PERFORMED.

- > Tightness test every five years for ten years if tank and piping have approved corrosion protection, and system has spill and overfill protection.
- > Test annually for steel tanks not provided with requirements listed in former paragraph.

MANUFACTURER'S CERTIFICATION OF TIGHTNESS TEST PERFORMANCE ON FILE.

This is a piece of paper that indicates the date, type of test, tester, and test conclusion. Inconclusive tests results are considered a FAIL and tank must be taken out of service until problem identified and corrected.

ALLOWABLE TIME PERIOD FOR THIS METHOD OF LEAK DETECTION.

- > All tanks may use this method of leak detection until December 22, 1998.
- Newly installed systems with corrosion protection may use this method until December 22, 1998 or for the first ten years after installation, whichever date is later.
- Existing storage tanks which have been upgraded (including piping upgrade) may use this method until December 22, 1998 or ten years after upgrade, whichever date is later.

CRITERIA FOR REPORTING A SUSPECTED LEAK: Monthly reconciliation exceeds 1% of throughput + 130 gallons for two months in a row, failed tightness test, or other operating factor that would contribute to a leak.

A change in the method of leak detection must be reported to the Department of Commerce, Bureau of Storage Tank Regulation, PO Box 7837, Madison, WI 53707-7837

ADMINISTRATIVE REQUIREMENT FOR PERMIT RENEWAL

INVENTORY CONTROL AND ANNUAL TIGHTNESS TESTING

A. Inventory Control

Inventory control records do not need to be submitted to the department with the permit application, but must be kept on site for inspector verification.

- Inventory control records must include daily "stick readings", daily through-put, and monthly reconciliation.
- Inventory control of retail storage tanks must include daily reconciliation.

B. Tightness Testing

Documentation must be submitted which includes the following information:

- Site location.
- Name of the company performing the test.
- Name of test performed and Wisconsin Material Approval number.
- Signature and certification number of the technician.
- Date the test was conducted.
- Time of day the test started and ended test run time.
- Results of the test based on the threshold accuracy (GPH.).
 - Tightness test must be conducted according to the Wisconsin Material Approval. Some methodologies and test equipment require that an ullage test must be performed in conjunction with the volumetric test. In this situation the results of the ullage test must also be submitted.)
- Tank size.
- Tank and line construction.
- Pressure (psi) the line test was conducted at.
- Contents of the tank.
- Volume of product in tank at time of test.

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STATISTICAL INVENTORY RECONCILIATION (SIR) COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK AND PIPING.

TO BE IN COMPLIANCE, ALL REQUIREMENTS MUST BE MET.

SYSTEM MUST BE IN COMPLIANCE WITH ANNUAL TIGHTNESS TEST REQUIREMENT PRIOR TO IMPLEMENTING SIR.

The SIR methodology can not be used to bring an existing system into compliance. SIR must be in place within 12 months of last annual tightness test to be acceptable as a monthly monitoring method for tank and piping. An annual test is still required for the mechanical flow restrictor.

The SIR methodology can be used from the onset on a new system if the tank has been subjected to and passed the pre-startup integrity test.

- SIR METHODOLOGY MUST HAVE COMMERCE MATERIAL APPROVAL FOR ACCEPTABLE LEAK DETECTION METHODOLOGY.
- STATISTICAL ANALYSIS IS PERFORMED EVERY CALENDAR MONTH.

 Data recording and review of inventory records through statistical analysis must be performed every thirty days.
- INVENTORY CONDUCTED ACCORDING TO STATISTICAL ANALYSIS PROVIDER'S SPECIFICATIONS
 Inventory data gathering and record keeping must be performed exactly according to the statistical analysis provider's specifications.
- STATISTICAL ANALYSIS RESULTS KEPT ON FILE AT SITE.

All inventory records and results of the SIR analysis must be readily available for inspection. Records must be maintained on site for at least twelve months.

MANUFACTURER'S CERTIFICATION OF PERFORMANCE FOR THE SIR ANALYSIS METHOD ON FILE.
This is documentation that the SIR methodology has received Wisconsin Material Approval.

CRITERIA FOR REPORTING SUSPECTED LEAK: A single analysis indicating a leak or a failed test. Inconclusive results indicate non compliance with monthly leak detection requirements and are considered a fail.

ADMINISTRATIVE REQUIREMENT FOR PERMIT RENEWAL

STATISTICAL INVENTORY RECONCILIATION (SIR)

Documentation must be submitted including the following information:

- · Site location.
- Name of the SIR method used.
- SIR Wisconsin Material Approval number.
- SIR method is approved for the size of the tank.
- SIR start up date.
 - The SIR can not be used to bring a system into compliance.
 - SIR must be in place within 12 months of last annual tightness test (tank/piping) to be acceptable as a monthly monitoring method for tank and piping.
- Capacity of tank.
- Contents of tank.
- Tank construction.
- Information including monthly dates and throughput, tank inventory, and the difference between calculated and actual gallons.
- The report must also clearly indicate the SIR results as a (pass/fail) according to the threshold established in the Wisconsin Material Approval.
 - Records must be maintained on site for the past 12 months.
 - SIR report result which is designated as "Inconclusive" is considered a FAIL.

NOTE: An annual test is still required for the mechanical flow restrictor device.

MANUAL TANK GAUGING COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK ONLY, EXCEPT TANKS UPGRADED WITH CATHODIC PROTECTION.

TO BE IN COMPLIANCE ALL REQUIREMENTS MUST BE MET.

MANUAL TANK GAUGING MUST BE PERFORMED EVERY WEEK

The test procedure must be performed every seven days.

NOMINAL TANK CAPACITY IS 2,000 GALLONS OR LESS.

Manual Tank Gauging is not allowed as a leak detection method for tanks larger than 2,000 gallons. Tanks of 1001 to 2000 gallons may use manual tank gauging in place of manual inventory control.

TEST PERIOD DURATION, IN WHICH NO PRODUCT IS ADDED TO OR REMOVED FROM THE TANK:

- > 550 gallon capacity or less, a test period of 36 hours is required.
- > 551 1,000 gallon capacity, a test period of 44 hours is required (1,000 gal. tank is 64" X 73").
- > 1,000 gallon capacity if tank is 48" X 28", a test period of 58 hours is required.
- > 1,001 2,000 gallon capacity, a test period of 36 hours is required *plus* annual tightness test.

≥ 1/8TH INCH ACCURACY IN TANK LIQUID LEVEL MEASUREMENT.

Conversions of liquid depth to gallons of product must be made using tank chart designed for subject tank and measuring stick with 1/8th inch graduations.

RESULTS BASED ON AVERAGE OF TWO TANK LIQUID LEVEL MEASUREMENTS.

Tank liquid level must be measured twice before and twice on conclusion of test period.

TEST WEEKLY VARIATION IS ALWAYS WITHIN ACCEPTED TOLERANCE.

The accepted variation between the beginning and ending measurements is no more than:

550 gallons or less capacity 10 gallons
 551 - 1,000 gallons
 13 gallons
 1,001 - 2,000 gallons
 26 gallons

TEST MONTHLY VARIATION IS ALWAYS WITHIN ACCEPTED TOLERANCE.

The accepted variation between the average of the beginning and ending measurements for four consecutive weeks is no more than:

- > 550 gallons or less capacity 5 gallons
- > 551 1,000 gallons 7 gallons
- > 1,001 2,000 gallons 13 gallons

XTANKS 1001 - 2,000 MUST ALSO HAVE ANNUAL TIGHTNESS TEST.

Only tanks 1,000 gallon or less nominal capacity may use Manual Tank Gauging as a substitute for tightness testing. **Minimum tightness testing frequency:

- Existing tanks upgraded Every 5 years for 10 years following upgrade.
- New tanks Every 5 years for 10 years following installation.

EXPIRATION DATE FOR MANUAL TANK GAUGING

- > If tank is 550 gallon capacity or less, method may be used until tank is closed.
- ➤ If tank is 551 1,000 gallon capacity, method may be used until tank is closed.
- Tanks greater than 1,000 gallons must have a monthly monitoring (at .2 gph leak rate threshold) method in place by the end of the periods listed above.

RECORD OF TEST RESULTS MUST BE MAINTAINED ON SITE AND MAINTAINED FOR AT LEAST ONE YEAR.

CRITERIA FOR REPORTING A LEAK: A single result greater than the weekly or monthly standard for a tank, or a failed tightness test.

Administrative Requirement For Permit Renewal

MANUAL TANK GAUGING

A. Tank 1,000 gallon capacity of less.

- If using manual tank gauging as the sole means of leak detection for the tank, the tank can be no greater than 1,000 gallons capacity.
- The only requirement is that the owner register the tank leak method as manual tank gauging.
 - During the annual permit inspection the inspector will review the documentation for compliance procedure (time interval and differential).

B. Tank 1,001 to 2,000 gallon capacity.

- If using manual tank gauging, an annual tightness test must also be conducted.
- Tank can be no greater than 2,000 gallon capacity.
- During the annual permit inspection the inspector will review the documentation for compliance procedure (time interval and differential).

Documentation must be submitted including the following information to verify the annual tightness test:

- · Site location.
- Name of the company performing the test.
- Name of test performed and Wisconsin Material Approval number.
- Signature and certification number of the technician.
- Date the test was conducted.
- Time of day the test started and ended test run time.
- Pressure (psi) the line test was conducted at.
- Results of the test based on the threshold accuracy (GPH.).
 - Tightness test must be conducted according to the Wisconsin Material Approval. Some methodologies and test equipment require that an ullage test be performed in conjunction with the volumetric test. In this situation the results of the ullage test must also be submitted.
- Tank size.
- Tank and line construction.
- Contents of the tank.
- Volume of product in tank at time of test.

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AUTOMATIC TANK GAUGING COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK ONLY.

TO BE IN COMPLIANCE ALL REQUIREMENTS MUST BE MET.

AUTOMATIC TANK GAUGE (ATG) CONDUCTS LEAK TEST AT LEAST ONCE EVERY MONTH.

- ATG must have COMMERCE Material Approval for the specific type of leak detection monitoring it is being used for: monthly monitoring, and/or annual tightness test.
- ATG should print out a report indicating the results of a leak test at least once every thirty days. This applies to an ATG that requires that the storage system be shut down to conduct a test, as well as ATGs that conduct a test while the system is operating.
- Test print out must indicate the actual Gallon Per Hour (GPH) leak rate that the system is programmed to declare a leak at. Leak declaration threshold must be the same as threshold indicated in Material Approval.

RECORDS OF LAST YEAR OF TEST RESULTS

Automatic Tank Gauging test reports for the past 12 months must be readily available on site for inspection.

EXPRECORDS ON FILE OF CALIBRATION, MAINTENANCE AND REPAIR FOR LAST YEAR.

Records of any work done on the ATG in the past twelve months should be readily available for inspection.

CRITERIA FOR REPORTING A LEAK: A single test result greater than the monthly or yearly standard for a tank, or a failed tightness test.

ADMINISTRATIVE REQUIREMENT FOR PERMIT RENEWAL

AUTOMATIC TANK GAUGING

Documentation must be submitted including the following information:

- Site location.
- Name and model number of ATG.
- Material approval number.
- Probe number (where applicable).
- Site name and address printed on the tape.
- Contents and capacity of tank.
- One test for each of the last three months of test results approximately 28 to 32 days apart.
- Test must be conducted according to the manufacturer's material approval.
 - Some manufacturers require that the tank have a minimum of 12 inches of product in the tank at the time of the test, others require that the tank be filled at least 10%, 50%, or 59% of total capacity.
- The date the test was conducted.
- Time of day the test started and ended run time.
- Final leak rate.
 - The test result must verify the final leak rate and declare a PASS or FAIL.
 - The material approval must be referred to. Some manufacturers require only a pass/fail .2 GPH hour test, others require the final leak rate be printed on the tape.

AUTOMATIC TANK GAUGING AND INVENTORY CONTROL GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK ONLY.

TO BE IN COMPLIANCE, ALL REQUIREMENTS MUST BE MET

AUTOMATIC TANK GAUGE MUST CONDUCT LEAK TEST AT LEAST ONCE EVERY MONTH.

Tank monitor should print out a report indicating the result of a leak test at least once every thirty days. This applies to tank monitors that require the storage system be shut down to conduct a test, as well as tank gauges that conduct a test while the storage system is operational.

- EXPRECORD TANK LIQUID LEVEL, LIQUID VOLUME, AND AMOUNT OF PRODUCT PUMPED DAILY.
 - Measurements must be recorded every day, including deliveries and product removed by any means.
- MEASURING STICK MUST HAVE 1/8TH INCH GRADUATIONS IN MEASUREMENTS.
 - Convert measurements of liquid depth to liquid volume using tank chart corresponding to tank.
 - Compare Measurement of delivery volume to volume listed on delivery receipt.
 - Measurements of the liquid volume in the tank must be made before and after each delivery to calculate the volume of the delivery based upon liquid level measurement. Compare this calculated volume to the delivery volume (be sure to use gross gallons) indicated on the delivery receipt.
 - Discrepancy must be investigated.
- DROP TUBE PRESENT IN TANK FILL PIPE.

A drop tube is an extension of the fill pipe that extends to within 4 inches of the tank bottom.

- DISPENSER METER CALIBRATED ON AN ANNUAL BASIS.
- RECORD MONTHLY CHECK FOR WATER.

If no water is detected, write "0" in record to document that check was conducted. If water was discovered record amount and how problem was corrected. If water level is 2" or more it should be removed.

MONTHLY RECONCILIATION.

Compute total daily over/short and compare your monthly over/short to the threshold (1% of throughput plus 130 gallons of product pumped during the month) to determine if you have a problem. Record this calculation and the results of the comparison.

CRITERIA FOR REPORTING A SUSPECTED LEAK:

An automatic tank gauge test result indicating a failed test or a leak, or monthly inventory reconciliation that exceeds 1% of throughput + 130 gallons for two months in a row, or other operating factor that would contribute to a leak.

- RECORD OF LAST YEAR OF TEST RESULTS
- AUTOMATIC TANK GAUGE TEST REPORTS FOR THE LAST 12 MONTHS MUST BE READILY AVAILABLE FOR INSPECTION.
- ORIGINAL COPY OF RECORDS MUST BE MAINTAINED ON SITE WHERE THE TANK IS LOCATED.
- RECORDS MUST INDICATE TEST THRESHOLDS

Automatic tank gauge records must indicate the actual leak rate.

EX RECORDS ON FILE OF CALIBRATION, MAINTENANCE, AND REPAIR CONDUCTED THE PAST YEAR.

Records of any work conducted on the automatic tank gauge in the last year must be available for inspection.

Administrative Requirement For Permit Renewal

AUTOMATIC TANK GAUGING AND INVENTORY CONTROL

Documentation must be submitted including the following information:

- Site location.
- Name and model number of ATG.
- Wisconsin Material Approval number.
- Probe number (where applicable).
- Site name and address printed on the tape.
- Contents and capacity of tank.
- One test for each of the last three months of test results approximately 28 to 32 days apart.
- Test must be conducted according to the manufacturers material approval.
 - Some manufacturers require that the tank have a minimum of 12 inches of product in the tank at the time of the test, others require that the tank be filled at least 10%, 50%, or 59% of total capacity.
- The date the test was conducted.
- Time of day the test started and ended run time.
- Final leak rate.
 - The test result must verify the final leak rate and declare a PASS or FAIL.
 - The conditions of the Wisconsin Material Approval must be complied with. Some manufacturers require only a pass/fail .2 GPH hour test, others require the final leak rate be printed on the tape.

Inventory control records do not need to be submitted to the department with the permit application, but must be kept on site for inspector verification.

During the annual permit inspection Petroleum Inspectors or LPO inspectors will review the documentation for proper procedure and compliance.

GROUND WATER MONITORING COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK AND PIPING.

TO BE IN COMPLIANCE, ALL REQUIREMENTS MUST BE MET

PRIOR TO INSTALLATION OF GROUNDWATER MONITORING WELLS A SITE ASSESSMENT MUST BE CONDUCTED.

Because of the information required to be gathered, the site assessment should be conducted by a qualified hydrogeologist.

- SITE ASSESSMENT SPECIFIES NUMBER AND LOCATION OF WELLS.
- WELLS MUST BE CONSTRUCTED ACCORDING TO WDNR GUIDELINES.
- ALL COMPONENTS OF SYSTEM MUST BE WITHIN 25 FEET OF A GROUNDWATER MONITORING WELL.
- SGROUNDWATER MONITORING DEVICE MUST HAVE WISCONSIN MATERIAL APPROVAL.
- WELLS MONITORED FOR EVIDENCE OF A LEAK AND RESULTS RECORDED EVERY MONTH.

If monitoring is conducted automatically by a sensing device, the status of the device (power light on, alarm light off) must be checked every month and the results of the status check recorded.

RECORDS ON FILE OF THE LAST YEAR MONITORING RESULTS.

Records must be maintained on site and available for inspection.

- WELLS MUST BE PROPERLY MARKED SO THEY CAN BE EASILY DISTINGUISHED FROM FILL POINTS OR OTHER DEVICES.
 - A black triangle on a white background is the standard monitoring well marking. Covers that are triangular in shape are also acceptable.
 - Well covers should be secured by means of a special tool or socket wrench.
- RECORDS ON FILE OF CALIBRATION, MAINTENANCE, AND REPAIR OF GROUNDWATER MONITORING DEVICE FOR THE PAST TWELVE MONTHS.

Records must be maintained on site and available for inspection.

CRITERIA FOR REPORTING A SUSPECTED LEAK: Any evidence that tank or piping contents are present in the well (odor, sheen, any amount of liquid product).

A CHANGE IN THE METHOD OF LEAK DETECTION MUST BE REPORTED TO THE DEPARTMENT OF COMMERCE, BUREAU OF STORAGE TANK REGULATION, PO BOX 7837, MADISON, WI 53707

Administrative Requirements For Permit Renewal

GROUNDWATER MONITORING

Documentation must be submitted including the following information:

- Site location.
- · Wisconsin Material Approval Number.
- Model name and number of the device/system.
- The Sensing Probe number according to the Material Approval. (NOT the serial number.)
 - The sensing probe must be approved for the size of the tank.
- Results for the past 12 months.
 - If monitoring is conducted automatically by an electronic sensing device, the status of the device (power light, alarm light) must be checked monthly and the results of the status check recorded manually.
 - If the monitoring system has a printer, a print out of the test results must be submitted.

Note: Prior to installation of groundwater monitoring wells, a site assessment must be conducted.

Prepared by the Environmental and Regulatory Services Division, Wisconsin Department of Commerce (Rev. 9/98)

SOIL VAPOR MONITORING COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK AND PIPING.

TO BE IN COMPLIANCE, ALL REQUIREMENTS MUST BE MET.

PRIOR TO INSTALLATION OF SOIL VAPOR MONITORING WELLS A SITE ASSESSMENT MUST BE CONDUCTED.

The information required to be gathered for the site assessment should be completed by a qualified professional.

- Backfill around storage system is sufficiently porous to allow migration of vapors.
- Product stored can be detected by monitoring devices.
- Monitoring is not subject to interference such as groundwater.
- Evel of background contamination will not interfere with monitoring.

SITE ASSESSMENT SPECIFIES NUMBER AND LOCATION OF WELLS.

- Wells must be located to detect a leak from any portion of the storage system that routinely contains product.
- Vapor wells used to monitor piping must be located adjacent to the piping.
- WELLS MUST BE CONSTRUCTED ACCORDING TO WDNR GUIDELINES.
- SOIL VAPOR MONITORING DEVICE MUST HAVE WISCONSIN MATERIAL APPROVAL.
- WELLS MONITORED FOR EVIDENCE OF A LEAK AND RESULTS RECORDED EVERY MONTH.

If monitoring is conducted automatically by a sensing device, the status of the device (power light on, alarm light off) must be checked every month and the results of the status check recorded.

RECORDS ON FILE OF THE LAST YEAR MONITORING RESULTS.

Records must be maintained on site and available for inspection.

WELLS MUST BE PROPERLY MARKED SO THEY CAN BE EASILY DISTINGUISHED FROM FILL POINTS OR OTHER DEVICES.

- A black triangle on a white background is the standard monitoring well marking. Covers that are triangular in shape are also acceptable.
- Well covers should be secured by means of a special tool or socket wrench.

RECORDS ON FILE OF CALIBRATION, MAINTENANCE, AND REPAIR OF SOIL VAPOR MONITORING DEVICE FOR THE PAST TWELVE MONTHS.

Records must be maintained on site and available for inspection.

CRITERIA FOR REPORTING A SUSPECTED LEAK: ANY SIGNIFICANT INCREASE IN VAPOR LEVELS ABOVE THE BACKGROUND ESTABLISHED BY THE SITE ASSESSMENT.

Administrative Requirement For Permit Renewal

SOIL VAPOR MONITORING

Documentation must be submitted including the following information:

- · Site location.
- The Wisconsin Material Approval number.
- Probe model number used to monitor for the presence of vapors.
- The last 12 months of monitoring records.

Note: A site assessment must be conducted prior to installing the monitoring wells, proof of assessment must be submitted when the site initially declares vapor monitoring as the leak detection methodology.

PIPING TIGHTNESS TESTING COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO PIPING ONLY.

TO BE IN COMPLIANCE, ALL REQUIREMENTS MUST BE MET.

TIGHTNESS TEST METHODOLOGY OR TEST DEVICE MUST HAVE WISCONSIN MATERIAL APPROVAL.

PIPING TIGHTNESS TEST CONDUCTED AT PROPER FREQUENCY.

- Test conducted every year for pressurized piping.

 Pressurized piping systems have the pure leasted at the test.
 - Pressurized piping systems have the pump located at the tank. Piping that carries product under pressure must be tested every year, whether it is protected against corrosion or not. Underground piping connected to aboveground tanks with gravity flow, is considered to be pressurized piping and meet the same requirements.
- ◆ Test conducted every three years for suction piping (Piping which includes a "foot" valve). Suction piping systems have the pump located at the base of the dispenser. Suction piping must be tested every three years, whether it is protected against corrosion or not.
- ♦ Exempt from test requirement.

Suction piping which is sloped toward the tank and has only one check valve which is located at the base of the dispenser (safer suction) is exempt from the tightness test requirement. Check valve device must be visually inspectable.

AUTOMATIC LINE LEAK DETECTION MUST BE USED TOGETHER WITH TIGHTNESS TESTING TO MEET THE LEAK DETECTION REQUIREMENTS FOR PRESSURIZED PIPING.

Refer to companion guide on Automatic Line Leak Detection

RECORDS OF RESULTS OF LAST TEST ON FILE.

Records must be kept on site. If an electronic line monitoring device (LLD) is permanently installed, test results may be printed out or may be stored in the device's memory. If test results are stored in the memory, be sure to know which buttons to push to display the results of the most recent test. A log must be maintained for monthly monitoring.

IF TEST DEVICE IS PERMANENTLY INSTALLED, RECORDS OF CALIBRATION, MAINTENANCE, AND REPAIR FOR THE PAST TWELVE MONTHS MUST BE MAINTAINED.

MANUFACTURER'S CERTIFICATION OF EQUIPMENT PERFORMANCE ON FILE.

This is the documentation provided by the manufacturer that the test method or the permanently installed device meets the standards set in the regulation. The piping test method must be able to detect a leak rate of .1 GPH for the annual test and .2 GPH for monthly monitoring.

CRITERIA FOR REPORTING A SUSPECTED LEAK: A single failed test.

INTERSTITIAL SPACE MONITORING RELEASE DETECTION COMPLIANCE GUIDELINE

THIS METHOD OF LEAK DETECTION APPLIES TO TANK AND PIPING.

TO BE IN COMPLIANCE, ALL REQUIREMENTS MUST BE MET.

MONTHLY MONITORING OF SPACE BETWEEN THE INNER AND OUTER WALLS, AND RESULTS RECORDED.

- If monitoring is conducted automatically by an electronic sensing device, the status of the device (power light, alarm light) should be checked monthly and the results of the status check recorded (printed out).
- If the monitoring consists of a visual inspection, a log documenting the inspection must be maintained. Visual inspection is only allowed for aboveground double walled tanks.

RECORDS ON FILE OF THE LAST YEAR OF MONITORING RESULTS.

Monitoring records must be maintained on site.

RECORDS ON FILE OF CALIBRATION, MAINTENANCE, AND REPAIR OF MONITORING DEVICE FOR PAST YEAR.

Record of any work conducted on the monitoring device in the past year must be maintained and available for inspection at the facility.

CRITERIA FOR REPORTING A SUSPECTED LEAK: Any evidence that the tank contents (free product or high levels of vapors) are present outside of the tank. Any evidence of the tank or piping contents (free product or high levels of vapors) detected in the space between the walls of the tank or piping, the system must be taken out of service, the problem corrected and the leak detection system made operable before placing the system back in service.

Administrative Requirement For Permit Renewal

Interstitial Monitoring

Documentation must be submitted with the following information:

- Site location.
- · Wisconsin Material Approval Number.
- Model name and number of the device/system.
- The Sensing Probe number according to the material approval. (Not the serial number).
 - Verify that the sensing probe number is approved for the type of construction of the tank/piping.
 - The tank/piping must be double walled.
 - Verify the sensing probe is approved for the size of the tank.
- Monitoring results for the past 12 month period.
 - If monitoring is conducted automatically by an electronic sensing device, the status of the device (power light, alarm light) must be checked monthly and the results of the status check recorded.
 - If the system has a printer, a print out of the test results must be submitted.

AUTOMATIC LINE LEAK DETECTION COMPLIANCE GUIDELINE

(also referred to as Mechanical LDs or Flow Restrictors)

THIS METHOD OF LEAK DETECTION APPLIES TO PRESSURIZED PIPING ONLY.

TO BE IN COMPLIANCE, ALL REQUIREMENTS MUST BE MET.

AUTOMATIC LINE LEAK DETECTORS MUST BE USED ON ALL PRESSURIZED PIPING.

- ANNUAL TEST OF OPERATION OF AUTOMATIC LINE LEAK DETECTOR.
 - The automatic line leak detector must be tested every year to be sure that it is working within the established tolerances.
 - Manufacturer's procedures must be followed in testing the device.
- RECORDS ON FILE OF RESULTS OF LAST TEST OF THE OPERATION OF THE AUTOMATIC LINE LEAK DETECTOR.
 - Records of the last annual test must be maintained at the facility.
- RECORDS ON FILE OF CALIBRATION, MAINTENANCE, AND REPAIR OF THE LEAK DETECTOR FOR THE LAST YEAR.
- MANUFACTURER'S CERTIFICATION OF EQUIPMENT PERFORMANCE.
 - Certification of performance is required for all automatic line leak detectors. The line leak detector must be able to detect a leak of 3 gallons per hour at 10 psi line pressure within one hour.
- **CRITERIA FOR REPORTING A SUSPECTED LEAK**: Significant reduction in flow for mechanical devices; pump shut-down or alarm for electronic devices.

Note: Automatic Line Leak Detectors are often referred to as flow restrictors or mechanical line leak detectors.

CATHODIC PROTECTION COMPLIANCE GUIDELINE

CATHODIC PROTECTION IS A METHOD OF PROTECTING BURIED STEEL TANKS OR PIPING FROM CORROSION.

THE FOLLOWING ARE REQUIREMENTS FOR ALL CATHODIC PROTECTION (CP) SYSTEMS:

MONITORING CONDUCTED INITIALLY WITHIN SIX MONTHS OF INSTALLATION.

In most cases the monitoring should be implemented immediately upon installation of the cathodic protection. Six months is allowed because there are circumstances, such as very dry soil, where it takes a period of time for the cathodic protection to be fully effective.

MONITORING CONDUCTED EVERY THREE YEARS AFTER INITIAL MONITORING.

Monitoring of the cathodic protection system's operational effectiveness should be conducted no more than 36 month intervals.

MONITORING CONDUCTED WITHIN SIX MONTHS OF ANY REPAIR TO STORAGE SYSTEM.

Construction or repair activities may accidentally interfere with the cathodic protection system. It is important to verify that cathodic protection is working after any work which disturbs any portion of the storage tank system.

EXQUALIFIED PERSON CONDUCTS MONITORING.

It is important that an experienced qualified individual performs the CP monitoring in order to give interpretations and causes of unacceptable readings. The voltage measurement, using a copper-copper sulfate cell for cathodically protected galvanic systems (the STI-P3 tank uses this form of CP), is greater than .85 volts. For systems using impressed current as a means of cathodic protection, a similar measurement is made, but the criteria is to measure a voltage drop of at least .35 volts when the rectifier is momentarily turned off.

THE FOLLOWING ARE REQUIREMENTS FOR IMPRESSED CURRENT CATHODIC PROTECTION SYSTEMS ONLY:

EXCATHODIC PROTECTION SYSTEM DESIGNED BY A CORROSION EXPERT (NACE REGISTERED).

Impressed current systems are very sophisticated and can damage a storage system or near-by systems if they are not properly designed and installed.

SYSTEM VOLTAGE AND AMPERAGE READINGS RECORDED EVERY 60 DAYS.

Impressed current systems tap into the facility's electrical supply to provide cathodic protection. The amount of electricity being used must be monitored to ensure that the system is working properly. Facility personnel can be instructed to conduct the system test and readings.

RECORDS ON FILE OF LAST THREE VOLTAGE AND AMPERAGE READINGS.

Records must be maintained at the facility and available for inspection.

STORAGE SYSTEM UPGRADE COMPLIANCE GUIDELINE

By December 22, 1998, all underground storage systems designated as federally regulated must be closed unless they meet regulatory upgrade requirements. There are three categories of upgrade standards that must be met:

- ◆ Corrosion protection (CP),
- ◆ Spill containment, and
- Overfill prevention.

SOURCE CORROSION PROTECTION UPGRADE

Corrosion protection upgrade can be met be interior lining and/or cathodic protection by anodes or impressed current. It is not practical and in some cases not possible to add cathodic protection by sacrificial anodes to existing buried tanks. To upgrade corrosion protection (CP) to a tank, *one* of the following four methods is required:

- 1. To upgrade tank CP by lining the interior of the tank:
 - Either a site assessment must be conducted or the interior of the tank must be visually inspected by a qualified individual.
 - The work must be conducted in accord with NLPA Standard 631.
 - ♦ Within 10 years after lining the tank and every 5 years thereafter the tank must be internally inspected by a qualified individual to evaluate structural soundness of the tank and lining.
- 2. To upgrade tank CP by cathodic protection one of the following three methods must be conducted:
 - If the tank is less than 10 years old:
 - A. The tank must use one of the approved methods of leak detection: automatic tank gauging, interstitial monitoring, statistical inventory reconciliation, soil vapor, or groundwater monitoring, after the addition of the impressed current. Leak detection monitoring by inventory control, tightness test, or manual tank gauging is not acceptable.
 - B. The tank must initially be tightness tested prior to installing the CP and again three to six months following the first operation of the CP system.

or

C. The tank is assessed for corrosion holes by conducting 2 tightness tests. The first test shall be conducted prior to installing the cathodic protection system. The second test shall be conducted between 3 and 6 months following the first operation of the CP system

or

- D. The tank is assessed by another method approved by the department.
- 3. If the tank is 10 years old or older:
 - The tank must be internally inspected and determined to be structurally sound and free of corrosion holes before cathodic protection is added.
 - In addition to cathodic protection, the tank must also be internally lined as specified in the administrative code, unless the method of cathodic protection is impressed current.
- 4. To add cathodic protection to the tank by interior lining and the addition of impressed current:
 - The lining must be conducted in accord with NLPA Standard 631.
 - Plans must be submitted for review and approval prior to installation of an impressed current system.
 - ♦ There is no requirement for periodic internal inspection, but CP monitoring must be performed.
- 5. To add cathodic protection to the *piping* by impressed current:
 - The work must be conducted according to nationally recognized standards.
 - No assessment of the condition of the piping is required.
 - Plans must be submitted for review and approval prior to installation of an impressed current system.
 - There is no age requirement for the piping.

(Continuation of Storage System Upgrade Compliance)

SPILL CONTAINMENT UPGRADE

To add spill containment to a tank a liquid tight 'bucket" or spill containment 'manhole" must be installed around the fill pipe to contain spills, leaks, or drips that may occur when the delivery hose is disconnected. There is no size or capacity requirement for the spill containment.

> OVERFILL PREVENTION UPGRADE:

To add overfill prevention to a tank, one of the following must be installed:

- A device that shuts-off the flow of product to the tank from the delivery hose. These are usually installed in the fill pipe.
- A device that restricts the flow of product into the tank. These are usually ball float valves or float vent valves installed in the vent line.
- A high level alarm that alerts the operator. The delivery person must be able to detect the alarm. These are typically added to automatic tank gauges.

NOTE: Spill containment and overfill prevention devices are not required when the storage tank is filled by transfers of no more than 25 gallons at one time.

RECORD KEEPING AND REPORTING GUIDELINE

All owners or operators of regulated UST systems must comply with reporting/record keeping to be in compliance with federal and state requirements. Some records must be maintained for the life of the system and other records must be kept long enough to show recent compliance status.

Reporting:

Installation of new system Installation plan submittal for approval.

System upgrade Upgrade installation/retrofit plan submittal for approval. Registration of new system Submittal of SBD-7437 for UST, SBD-8731 for AST.

Revised registration for upgrade Submittal of SBD-7437 for UST, SBD-8731 for AST; reflecting

upgrade.

Submittal of SBD-7437 for UST, SBD-8731 for AST; reflecting Change-in-service:

change-in-service between regulated and non regulated

product.

Submittal of SBD-7437 for UST, SBD-8731 for AST, reflecting System closure:

closure.

Change in leak detection methodology: Submittal of SBD-7437 for UST, SBD-8731 for AST.

Report all releases to WDNR: All releases must be reported including: spill and overfills,

release from system failure, and releases discovered during

closure activities.

Record keeping:

Installation plan and approval letter: Copy must be maintained on site for life of system.

Petition for Variance Copy must be maintained on site for life of system.

Documentation must be maintained for 10 years and on site Product inventory:

for previous 12 months.

on site from the previous test.

Documentation of operation of corrosion

protection equipment:

Documentation of system repairs: Documentation must be maintained for the life of the system

and maintained on site for the previous 12 months.

Documentation of maintenance and service

records for system equipment:

Written documentation of all calibration, maintenance, and repair of release detection equipment must be maintained for the life of the system and maintained on site for the previous

Documentation must be maintained for at least 3 years and

12 months.

Documentation of leak detection monitoring

and test results:

Documentation shall be maintained for at least 10 years and must be maintained on site for previous 12 months.

Documentation of annual tightness test results must be

retained until the next two tests are conducted.

Documentation of all performance claims (manufacturer's and COMMERCE Material Approval) pertaining to any leak detection

system used:

Documentation must be maintained for 10 years after

installation.

Documentation of corrosion protection test

and results:

Documentation must be maintained since the last test.

If corrosion protection is not used, documentation of corrosion expert's

analysis of site corrosion potential:

Documentation must be maintained on site for life of system.

Documentation of closure assessment at

Inventory form, closure checklist, and assessment report closure or change-in-service: should be maintained indefinitely.

Regulatory reference for reporting and record keeping requirements are within CFR 280.34 and Comm 10.57(6), 10.58, 10.625, and 10.738.

FEDERALLY REGULATED TANK - PERMIT RENEWAL GUIDELINE

Underground storage tanks classified as federally regulated tanks are required to have a permit to be in operation. Verification of leak detection compliance of the tank and the associated piping is one of the primary considerations in the issuance of a permit renewal. The following identifies the accepted leak detection methodologies and the specific information for each methodology required to be submitted to the Bureau of Storage Tank Regulation for the issue of a permit.

1. INVENTORY CONTROL AND ANNUAL TIGHTNESS TESTING

A. Inventory Control

Inventory control records do not need to be submitted to the department with the permit application, but must be kept on site for inspector verification.

- Inventory control records must include daily "stick readings", daily through-put, and monthly reconciliation.
- Inventory control of retail storage tanks must include daily reconciliation.

B. Tightness Testing

Documentation must be submitted which includes the following information:

- · Site location.
- Name of the company performing the test.
- Name of test performed and Wisconsin Material Approval number.
- Signature and certification number of the technician.
- Date the test was conducted.
- Time of day the test started and ended test run time.
- Results of the test based on the threshold accuracy (GPH.).
 - Tightness test must be conducted according to the Wisconsin Material Approval. Some methodologies and test equipment require that an ullage test must be performed in conjunction with the volumetric test. In this situation the results of the ullage test must also be submitted.)
- Tank size.
- Tank and line construction.
- Pressure (psi) the line test was conducted at.
- Contents of the tank.
- Volume of product in tank at time of test.

2. STATISTICAL INVENTORY RECONCILIATION (SIR)

Documentation must be submitted including the following information:

- Site location.
- Name of the SIR method used.
- SIR Wisconsin Material Approval number.
- SIR method is approved for the size of the tank.
- SIR start up date.
 - The SIR can not be used to bring a system into compliance.
 - SIR must be in place within 12 months of last annual tightness test (tank/piping) to be acceptable as a monthly monitoring method for tank and piping.
- Capacity of tank.
- Contents of tank.
- Tank construction.
- Information including monthly dates and throughput, tank inventory, and the difference between calculated and actual gallons.
- The report must also clearly indicate the SIR results as a (pass/fail) according to the threshold established in the Wisconsin Material Approval.

- Records must be for the past 12 months.
- A result which is designated as "Inconclusive" is considered a FAIL.

NOTE: An annual test is still required for the mechanical flow restrictor.

3. AUTOMATIC TANK GAUGING

Documentation must be submitted with the following information:

- Site location.
- Name and model number of ATG.
- Material approval number.
- Probe number (where applicable).
- Site name and address printed on the tape.
- Contents and capacity of tank.
- One test summary for each of the last three months approximately 28 to 32 days apart.
- Test must be conducted according to the manufacturers material approval.
 - Some manufacturers require that the tank have a minimum of 12 inches of product in the tank at the time of the test, others require that the tank be filled at least 10%, 50%, or 59% of total capacity.
- The date the test was conducted.
- Time of day the test started and ended run time.
- Final leak rate.
 - The test result must verify the final leak rate and declare a PASS or FAIL.
 - The material approval must be referred to. Some manufacturers require only a pass/fail .2 GPH hour test, others require the final leak rate be printed on the tape.

4. MANUAL TANK GAUGING

A. Tank 1,000 gallon capacity of less.

If using manual tank gauging as the sole means of leak detection for the tank, the tank can be no greater than 1,000 gallons capacity.

- The only requirement is that the owner register the tank leak method as manual tank gauging.
 - During the annual permit inspection the inspector will review the documentation for compliance procedure (time interval and differential).

B. Tank 1,001 to 2,000 gallon capacity.

- If using manual tank gauging, an annual tightness test must also be conducted.
- Tank can be no greater than 2,000 gallon capacity.
- During the annual permit inspection the inspector will review the documentation for compliance procedure (time interval and differential).

Documentation must be submitted including the following information to verify the annual tightness test:

- Site location.
- Name of the company performing the test.
- Name of test performed and Material Approval number.
- Signature of the technician.
- Date the test was conducted.
- Time of day the test started and ended test run time.
- Pressure (psi) the line test was conducted at.
- Results of the test based on the threshold accuracy (GPH).
 - Tightness test must be conducted according to the Wisconsin Material Approval. Some methodologies and test equipment require that an ullage test be performed in conjunction with the volumetric test. In this situation the results of the ullage test must also be submitted.

- Tank size.
- Tank and line construction.
- Contents of the tank.
- Volume of product in tank at time of test.

•

5. AUTOMATIC TANK GAUGING AND INVENTORY CONTROL

Documentation must be submitted including the following information:

- Site location.
- Name and model number of ATG.
- Wisconsin Material Approval number.
- Probe number (where applicable).
- Site name and address printed on the tape.
- Contents and capacity of tank.
- One test summary for each of the last three months approximately 28 to 32 days apart.
- Test must be conducted according to the manufacturers material approval.
 - Some manufacturers require that the tank have a minimum of 12 inches of product in the tank at the time of the test, others require that the tank be filled at least 10%, 50%, or 59% of total capacity.
- The date the test was conducted.
- Time of day the test started and ended run time.
- Final leak rate.
 - The test result must verify the final leak rate and declare a PASS or FAIL.
 - The conditions of the Wisconsin Material Approval must be complied with. Some manufacturers require only a pass/fail .2 GPH hour test, others require the final leak rate be printed on the tape.

Inventory control records do not need to be submitted to the department with the permit application, but must be kept on site for inspector verification.

During the annual permit inspection Commerce Petroleum Inspectors or LPO inspectors will review the documentation for proper procedure and compliance.

6. INTERSTITIAL MONITORING

Documentation must be submitted with the following information:

- Site location.
- Wisconsin Material Approval Number.
- Model name and number of the device/system.
- The Sensing Probe number according to the material approval. (NOT the serial number).
 - Verify that the sensing probe number is approved for the type of construction of the tank/piping.
 - The tank/piping must be double walled.
 - Verify the sensing probe is approved for the size of the tank.
- Monitoring results for the past 12 month period.
 - If monitoring is conducted automatically by an electronic sensing device, the status of the device (power light, alarm light) must be checked monthly and the results of the status check recorded.
 - If the system has a printer, a print out of the test results must be submitted.

7. GROUNDWATER MONITORING

Documentation must be submitted including the following information:

- Site location.
- Wisconsin Material Approval Number.

- Model name and number of the device/system.
- The Sensing Probe number according to the Material Approval. (NOT the serial number.)
 - The sensing probe must be approved for the size of the tank.
- Results for the past 12 months.
 - If monitoring is conducted automatically by an electronic sensing device, the status of the device (power light, alarm light) must be checked monthly and the results of the status check recorded manually.
 - If the monitoring system has a printer, a print out of the test results must be submitted.

Note: Prior to installation of groundwater monitoring wells, a site assessment must be conducted.

8. SOIL VAPOR MONITORING

Documentation must be submitted including the following information:

- Site location.
- Wisconsin Material Approval number.
- Probe model number used to monitor for the presence of vapors.
- The last 12 months of monitoring records.

Note: A site assessment must be conducted prior to installing the monitoring wells, proof of assessment must be submitted when the site initially declares vapor monitoring as the leak detection methodology.

SPECIAL NOTE: Each underground tank has an identification number designated by the state. It is important that owners know or can easily reference the number for each individual tank. Any correspondence or reporting should include the tank identification number to expedite administration and reduce confusion or error.

